Biomarkers improve ischemic stroke prediction

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Testing patient's blood for two proteins or biomarkers that occur when inflammation is present could help doctors identify which patients are more likely to have a stroke, said researchers at Baylor College of Medicine in Houston in a report that appears online in the journal *Stroke*.

The biomarkers -- lipoprotein-associated phospholipase A2 (Lp-PLA2) and high-sensitivity C-reactive protein (hs-CRP) -- are known to be associated with an increased risk of the kind of stroke that occurs when blood flow to the brain is blocked. In this study, researchers led by Dr. Vijay Nambi, assistant professor of medicine-atherosclerosis and vascular medicine at BCM and staff cardiologist Center for Cardiovascular Disease Prevention at The Methodist DeBakey Heart and Vascular Center, studied 949 people taking part in the Atherosclerosis Risk in Communities study (ARIC), a large scale study designed to investigate the causes and course of atherosclerosis. Of those, 183 developed a stroke.

When they looked at the blood test results for the patients in the study, they found that testing for the two inflammation biomarkers helped obtain a better picture of the risk of stroke for each patient.

"Adding each biomarker individually to the traditional risk factors for ischemic stroke improved prediction," Nambi said. "However, adding both, along with taking into account how the two interact, gave the most improvement in prediction."

The traditional risk factors used to determine the likelihood of this type of stroke include age, sex, race, whether a person smokes, blood pressure, diabetes, use of high blood pressure medication and body mass index as a measure of obesity.

Nambi also examined whether setting a scale similar to that used in heart attack (low, intermediate and high) for the identification of stroke risk could be valuable.

"Being able to determine who is in more danger of stroke could eventually lead to more tailored treatment and preventative options," said Nambi.

Using only traditional risk factors, he and his colleagues defined those with a less than 2 percent chance of ischemic stroke in the next five years as low risk. Those with a 2 percent to 5 percent chance were defined as intermediate risk, and anyone with greater than a 5 percent chance of ischemic stroke were defined as high risk.

However, adding the biomarker data changed the risk category for some people. For example, 4 percent of people at low risk moved to intermediate risk while 11 percent in the intermediate group moved to high risk. However, 33 percent at high risk moved down to intermediate risk.

"While more studies must be done to determine if these categories can be used as a standard, these results show us one strategy to classify an individual's stroke risk and how this can be altered by the addition of novel blood tests," Nambi said. "By adding the two biomarkers we can better identify those at higher risk for stroke. Future studies should determine if changing treatment options based on risk could improve the prevention of ischemic stroke."

Dr. Christie M. Ballantyne, chief of atherosclerosis and vascular medicine at BCM and senior author of the study, added that "if we can identify who is at risk for a stroke, we have strong evidence that diet, exercise, smoking cessation and medicines for blood pressure and cholesterol will help to prevent stroke."

Source: Baylor College of Medicine